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ABSTRACT

This paper discusses the technical features necessary for a good World Wide Web (WWW) discussion forum, the fact that it should be seen as part of a more general cooperative space, and psycho-sociological aspects that are essential for success. The first section introduces the paper and lists reasons why newsgroups are generally more successful than WWW discussion forums. The second section describes technological parameters, including purposes of discussion forums, approaches to the problem of cognitive overhead (i.e., difficulty of the user interface and learning of the system), and privacy. The third section addresses non-technological parameters, focusing on the role of the leader. The fourth section considers discussion forums as part of a greater concept: general cooperation tools (GCTs) and general cooperation spaces (GCSs). The final section summarizes the paper. (Contains 10 references.) (MES)

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How to Make Discussion Forums Work on the WWW

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Abstract

It has often been claimed that networks like the WWW must not be seen just as huge distributed information systems, but rather also as systems that allow transactions, cooperation and communication. In this paper we discuss the technical features necessary for a good discussion forum, the fact that it should be really seen as part of a more general cooperation space, and psycho- sociological aspect that are essential for success.

1. Introduction

It has often been claimed that networks like the WWW must not be seen just as huge distributed information systems, but rather also as systems that allow transactions, cooperation and communication.

One of the most obvious tools for communication is the discussion forum. Indeed, see e.g. [Parsimony, ETI, Talkcity, Delphy], there are quite a few such discussion forums on the WWW. However, it is interesting to note that (a) a high percentage is used only quite infrequently, (b) they are often combined with other functions such as chats, see e.g. [Talkcity] and [Delphi], and that (c) the "older" type of discussions, news groups (outside WWW), are still very much alive, although more and more with cross-references to the WWW. It is worthwhile to examine why newsgroups, overall, are more successful than discussion forums, so far. We believe that there are five main reasons: (i) one is that all newsgroups are found in one place, rather than distributed over thousands of WWW servers; however, there is also a tendency today to combine many different forums in the same place: [Parsimony] is a very good example or to establish a "ring of forums" (where one forum leads to others); (ii) many desirable features that are conceivable are not available in discussion forums yet, e.g. the subscription technique (that new items are automatically shown when one has subscribed to them: this is a standard feature in news groups, yet is oddly missing in most discussion forums) (iii) access to news groups is often faster due to the extensive duplication/ propagation tools involved, (iv) discussion forums should be seen in a wider context as general cooperation tools (GCTs), and (v) many psycho- sociological phenomena one should be aware of when installing communication facilities are often blatantly ignored. It is our belief that discussion forums on the WWW will eventually replace newsgroups, due to the greater versatility of the WWW, particularly if they are used as true GCTs. In this paper we will report on some of the findings of our research on which conditions must be met to assure the success of a WWW discussion forum. This is based on the analysis of both successful and not so successful forums and techniques. Thus, this paper should be of interest to anyone intending to set up and operate a successful system for sharing and exchanging ideas.

The most important observations are that a successful discussion forum must of course be satisfactory from a technological point of view (and we mention some important parameters in [Chapter 2]). Yet at least as important are aspects of a socio- psychological nature (and we list some of them in [Chapter 3]). And that, finally, discussion forums, to be truly successful, should turn into general cooperation tools (GCTs) as explained in [Chapter 4].

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2. Technological parameters

It is important to understand that discussion forums must have a solid functional (technological basis) and user-interface, yet this is not enough to make them succeed. Other often overlooked yet more important issues are on a psychological level as we will discuss in [Chapter 3] and that discussion forums must not be seen in isolation but as GCTs with features such as described in [Chapter 4].

There is also another aspect that needs careful consideration: discussion forums can serve rather different purposes, and as such may have to vary from application to application. To be more specific, consider two rather different applications: One, a discussion forum on certain medical issues, the other a discussion forum related to some Web Based Training applications in a subject area the requires much learner participation. In the first case, see e.g. [Infomed], the discussion forum very often "degenerates" in a collection of questions and answers: users tend to re-visit the same topic many times to find out if new contributions have been added or if their question has been answered. Hence in such a forum it is of paramount importance that new information can be located readily or that users are actively notified if an answer to their query is entered in the forum. In a Web Based Training environment as mentioned, see e.g. [Dietinger 98], the forum is often more a "real discussion" forum, with a thread of arguments that users have to be able to follow easily, no matter how those "threads" diverge or again converge. And in both cases more than just plain vanilla flavored communication and cooperation should be supported.

It is clear that a forum must be easy and fast to use; yet this is in direct contradiction to the demand of some users for powerful functionality: Typically, in a thread of discussion some contributors may not be of interest and the option to make their contributions invisible should exist; conversely, some contributors always make such erudite remarks that almost independent of the topic one wants to see what they have to say. It may be desirable to only see contributions that are fairly recent, or those that have received good marks from other readers (yes, such a grading system as available in some recommender systems, see below, is a very powerful function); it should be possible to highlight contributions by domain experts and also possible to collect interesting contributions in a private workspace (or one shared with others); users should be able to link contributions that they think belong together, such links being visible only to themselves or again to a well defined group of users. One of the important functions is a notification mechanism. Although some forums such as [Infomed] (using push technology) allow users to be notified of new contributions in topics of their choice (much as has been a long tradition with news groups) it would be e.g. nice if users could mark individual contributions posed (by themselves and others) so that they receive a notification as soon as someone reacts to the contributions at issue; or that users are notified if a new contribution containing a certain word or keyword is added into the forum. Of course discussion forums must be searchable by content, keywords, author, title, etc., etc. The list of functions that come up in connection with discussion forums is sheer endless. However, each new function introduced also introduces more cognitive overhead (i.e. makes the user interface and the learning of the system more difficult).

There are three main approaches to solve this problem: one is to keep the user interface and the functionality to a minimum; the second is to have various modes for, say, beginners, more advanced and expert users; and the third one is to offer a naive user interface, but a choice labeled "functions for experts" or such, that indeed yields much more functionality.

However, there is one feature that is crucial to an extent that we want to mention it right here: participants of a forum may just work with an assumed pen-name, or with a real identity. In either case it must be possible to send emails to (or chat with) other persons: and if they use pen-names their "anonymity" must not be violated by such emails! Integrated email or a private chat forum that can be started by a consenting group of participants at any point in time are crucial instruments for making a forum work, as we will see in [Chapter 3]. However, there is increasing concern with privacy issues on the WWW as such, and this extends to discussions: if someone uses a pen- name, the identity of the person behind it must be hidden for everyone, except in cases that are in violation of the law. We refer to the thorough discussion on those matters to [CACM 99] and to the fact that at least seven levels of anonymity can be identified to [Resnick 97]. However, we want to point out here that a "certification"

mechanism that permits to ask questions about some pen- name that are answered by a trusted server to an extent determined by the owner of the penname is a feature that is still missing in all systems we are aware of.

3. Non-technological parameters

As important as technological parameters like user friendliness, fast response times, a number of different access paradigms etc. may be, the best forum does not work if a number of psycho- sociological parameters are not right. The most important one of those is that there must be a "leader" or a "group of leaders". This does not mean that the forum has to be moderated (although a good moderator often helps), but it does mean that one or more persons should feel responsible for the forum to be "alive". Such persons can play this role because they explicitly started the forum with this function in mind, or such roles may emerge by themselves. It is not important that the leaders are "officially" known as having this role (although this usually is not a drawback): the only thing that counts is that they play a lead role:

Playing a lead role means carrying out at least some (and best all) of the following actions:

(i) Read all contributions in the forum and make sure that every question is answered, even if only by a temporary generic answer such as "This is an interesting question, I am also interested in an answer."

(ii) Make sure that questions are indeed answered in a meaningful way at some stage. This can often be done by someone playing the lead role in a hidden way, by e.g. sending an email to some participant who is suspected to know the answer in a way like " X has asked this question that I find interesting. I wonder if you could help find the answer?"

(iii) Point (ii) is the core of a more general issue: the combination of a forum and email (even if pen-names are allowed the email has to still work on the basis of those pen- names!) is essential. First, participants of forums sometimes want to discuss some things in private (starting a "private chat" or "private forum" may be alternatives to email); second, an important function of the lead role is to use email that is not visible in the forum to encourage participants, to solicit questions and answers, and to make sure that participants feel like they belong to a kind of electronic community. We want to explicitly acknowledge that this fact is already alluded to in (1) and was mentioned very explicitly by Lee Sproull in her keynote address at WebNet 98 in Orlando, Florida: and we can only emphasize her point: a forum without some participants that develop a minimal amount of bonding is usually doomed.

(iv) The development of a bond between participants of a forum can be fostered in many ways. The most personal ones are emails, thank you's in the forum and even common actions outside the Web (e.g. a forum on skin-cancer might support a donation campaign for research in this area, and progress of the action is reported). There are many other actions, some even automatable, that make or break a forum: if participants are asked for their birthday (not the year, please!) a "Happy Birthday" message is sent on time (preferably via a moderator who can add a personal note: nothing is worse than people believing they are treated personally and finding out that they are not!); if someone is a "frequent writer" this is gratefully acknowledged once in a while; if someone has not written for a long time, an email is sent to the effect "you have written such interesting contributions in the past; I have not heard a long time from you--- hope you are ok?". Note that those actions can be done by some "lead group" or can be automated to some extent: they must look personal and ideally they should be, the system just acting as a reminder.

(v) It is an important part of the lead role that persons are made aware of existing functionality, like "it seems you are very interested in how to deal with respiratory problems; do you know that you can subscribe to new contributions in the forum by doing such-and-such"; it is equally important that persons are brought together e.g. in the sense "I have noticed that person x is very interested in topic y; do you actually agree with the statements made?" (this could be an email or part of the forum).

(vi) A forum should have this personal touch due to an appointed or self-appointed or tacitly existing group of lead persons. However, the forum must also stay on track. It is not optimal if in a group on how to care for cats the whole forum becomes cluttered with "get well" wishes because some participant is known to have had an operation, or even worse with "Happy Easter" from everyone to everyone. Such exchanges should occur, but only to a certain level or in an isolated part in the forum, the rest by email or in chats or private forums.

The list above gives a good indication of some of the items that we have observed, and we hope they convey our message: a forum is dead if there is not at least one person constantly looking after it!

4. Discussion forums as part of a greater concept: general cooperation tools (GCTs) and general cooperation spaces (GCSs).

One important point to observe is that discussion forums can usually only be started by site administrators, are usually open to the general public or one well defined group, and are basically for writing comments (albeit possibly with some multimedia attachments). A General Cooperation Tool (GCT) does more: it permits all persons with write access to a part of the Server to define their own General Cooperation Space (GCS). Anyone creating such a cooperation space is a so-called facilitator for that particular GCS. Facilitators can make their GCS available with read and write privileges for whatever users they choose, and contributions can take any forms: notes, URLs, WinWord or PDF documents, pictures etc. Every entry comes with a short textual description, with optional attributes and an optional "grade". In conjunction with annotation and linking facilities as e.g. found in Hyperwave (see e.g. http://www.hyperwave.com/whitepaper, http://www.hyperwave.de/documentation, or http://www.hyperwave.com/hw_web_pages/delphi_opinion.pdf) such a GCS is indeed a collaborative environment to share e.g. bookmarks or other documents within the group defined by the facilitator. A push- functionality (akin to what is provided in Hyperwave as "query object") must allow automatic notification of participants of new entries at certain times, or depending on certain events and attributes. By also using various presentation strategies offered in the GCS, finding and sharing information becomes easy. By collecting information of particular interest in private areas of the Server users should be able to further personalize information according to their needs, including information residing in various GCS, or even outside such GCS. It is felt that such a GCT, by allowing the creation of arbitrarily many GCSs on the same server for different groups of persons is an ideal platform for communication and cooperation in Intranet and Internet environments.

Let us now look at GCTs and GCSs in some more detail. First, a GCT must be useable either in conjunction with ordinary Web Browsers or as separate application as a "floating window" while working with a WWW Server. It comes with different functionalities for the facilitator and for ordinary users.

A facilitator is any person that has write access to some part of the Server at issue. Typically, ever identified user should have a special personal area with write privileges: in this case, every user with a personal area can become a facilitator. A facilitator can establish one or more GCS with a space capacity as determined by the administrator. (When space runs out, it is up to the facilitator to ask for more, prune manually, prune using a utility provided e.g. by date, or set limits to the size of documents that can be added by users.) When establishing a GCS, a unique name has to be chosen for the GCS at issue and a number of parameters have to be set initially (and some can be changed and set also later) by the facilitator. The most important parameter is the list of users: the facilitator can include the emails of arbitrary persons who thereby become users of the GCS. However, any new user added becomes only active after the user (who is notified by email) agrees to be active. Also, users can leave a GCS at any time they desire, i.e. no user is ever in a GCS without explicit agreeing to be in it, and is free to leave at any time. Conversely, the facilitator may exclude any person at any time. Facilitators may permit self-registration for their GCS, or may insist that they install each user (one main difference is the anonymity of users, see below, and the fact that self-registering makes permanent exclusion of "nuisance members" complicated).

The facilitator may suggest one or more main topics: nobody else can suggest main topics, but everyone can suggest subtopics that are hierarchically structured to a level determined by the facilitator with some default (like e.g. 5 levels) preset. (Note that if the depth of levels allowed is set to one, then only contributions to the main topics suggested by the facilitator can be added.) The facilitator and only the facilitator can arrange, rearrange or delete contributions created by other users. The facilitator can designate himself or other persons for each main topic as "responsible", i.e. whenever a document is added in this topic an email to that extent is sent to the facilitator either immediately, or at certain times as designated by the facilitator. It is also the facilitator who decides whether additional attributes (like one of a set of keywords) has to be added to a contribution to later ease searching or the automatic posting of contributions with just certain properties: here the need for a powerful server allowing the addition of meta-data becomes essential.

When an ordinary user enters a GCS the view is very similar to what one expects in a newsgroup, or in the discussion forum of e.g. GENTLE see [Dietinger 98] and http://wbt.iicm.edu . A list of main topics is shown, and the contributions to the main topic can be expanded step-wise or "the whole thread at the same time" very much as in GENTLE. When a contribution is added, a short descriptive text is mandatory (and sometimes, in discussions, this is all that is required). An attachment is optional: such attachments can be a URL or list of URLs or some other document, including arbitrary multimedia files. Contributions can be given a "grade" between 0 to 10 (0 worst, 10 the best). Indeed such a grade can also be given when reading the contribution: the range of grades and their average is also shown for information. Only a single grade can be given to a document by the same person (to avoid "cheating").

When looking at contributions, users have a number of options similar to the ones mentioned in connection with discussion forums: indeed, one way to look at GCSs is to consider them very fancy discussion forums, of course: user can consult a GCS e.g. hierarchically (the usual way), but they can also sort the documents by author, by date, by date from a certain date onward, by opening the hierarchical structures only to the extent of showing branches that lead to documents that have been added after a certain date and by omitting contributions of certain authors ("blacklist"). Users can mark individual documents satisfying certain criteria (e.g. belonging to a particular topic or subtopic with an average grade higher than 6) so that information on them is sent at intervals they decide on (daily, weekly, bi- weekly or monthly).

A good GCT also supports "business cards" with information as provided by users. The business card has a pen-name chosen by the user, comes with or without picture, and whatever other information including email or phone number: clearly a "non-certified" business card without email or such may contain purely fictitious information! However, the GCT does keep track of the connection between pen-name and email (to which the password is sent): this information is treated as confidential except if opened for legal procedures. A GCS contains a messaging system that is based on the pen-names chosen, i.e. one- to- one communication is possible in a GCS, if desired. Note that the functionality of adding notes (both for private use or public with the GCS) should be supported, the same way as users should be able to create links even in material not authored by them (for their own use, or for the HCS). Such GCS- public notes and links are only visibly if the toggle "show notes of others " has been turned on by the facilitator, or is turned on by a user (in the latter case, notes and links are only visible during the current session for this user).

A GCT should also provide the "psyco- sociological" features mentioned in [Chapter 3] above. Indeed, everything that has been said so far is really an extension of "ordinary" discussion forums. However, there is one further feature that makes a GCT particularly useful: the book-marking facility. When browsing WWW sites users may find an interesting entry. Rather than making a bookmark for themselves on their PC they hit the GCT bookmark button, rather than the bookmark button of the browser. As a result, a list of groups in which they participate (potentially after identifying with name and password) is shown: they put their bookmark in the appropriate space with a short description (for themselves and others) and a "grade". Thus, the GCS is a powerful tool for bookmark sharing, an important feature for efficient WWW use.

Note that the bookmarks created can be checked for validity or changed contents by the GCT: the creators of bookmarks (and the facilitator if the toggle is set this way) can be notified if there is a potentially invalid link!

Thus, the list of shared bookmarks has a good chance to stay better up to date than any private list! When users find a bookmark that does not work, simply pressing a "bookmark does not work" button notifies the author and (see above) the facilitator.

5. Summary

Discussion forums have been around in the form of newsgroups for many years. They are also becoming more and more popular on WWW servers. None comes close to the functionalities described above, yet it is our belief that such functionalities are essential.

Note that a number of recommender systems [Resnick 97] have been around and are increasing in importance. A GCT can be seen as such a system where the recommendation (the grades, and the fact that bookmarks, i.e. URLs or other documents are added into the GCS) is coming from the fact that the group using a GCS is homogeneous and is supposed to have shared interests. Our approach is in line with the Personalized Recommender System, a prototype of which was developed by J.Horwarth and others under the guidance of Barry Fenn.

It is also conceivable that "recommendations" that come from similarities in judgement are exploited: this is increasingly done on some commercial WWW servers, and is pursued in recommender systems such as PHOAKS, ReferalWeb, GroupLens, Siteseer, Fab, Alexa and others. Also, the density and usage of links may be used to measure the importance of contributions, as is indeed done e.g. by the search- engine Google http://www.google.com . It is clear that powerful GCTs will be merged with some such attempts in the future. To put it into a nut-shell: discussion forums of the news group type will be more and more replaced by sophisticated WWW discussion forums that are really General Cooperation Tools. One such tool, called Hyperwave Cooperation Tool is currently being implemented at the institute of the second author.

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